

Serial No. 10/008,392

Filed: November 13, 2001

Title: SYSTEM AND METHOD USING THERMAL IMAGE ANALYSIS FOR POLYGRAPH TESTING

Remarks

The Office Action mailed June 4, 2003 has been received and reviewed. No claims have been amended. Therefore, claims 1-40 are pending in the present application. Reconsideration and withdrawal of the rejections are respectfully requested in view of the above amendments and the following remarks.

Information Disclosure Statement

The Examiner has not considered two documents provided on the Form 1449, "The Master of Disguise" and "Remote Sensing, Principles and Interpretation." The Examiner indicates that the portion of the references that caused it to be listed in the IDS should be submitted for consideration or a concise explanation of the references. Such documents were submitted for background art as indicated in the response to the previous office action.

Applicant provides a Table of Contents of the book entitled "Remote Sensing, Principles and Interpretation" and a copy of Chapters 1, 5, and 8 which provide general information regarding various state of the art techniques. Further, no additional pages from the book entitled "The Master of Disguise" are included as the Contents page of this book provides a concise explanation of the background and relevancy and it is requested that the Contents page be considered as the relevant information which caused it to be listed. Consideration of these materials (i.e., the Table of Contents pages) are requested in view of the previous 1449 requests provided.

The 35 U.S.C. §102 Rejection

The Examiner rejected claims 1, 2, 4-10, 12-13, 15-21, 23, 25-28, 30, 32-36 and 38-40 under 35 U.S.C. §102(b) as being anticipated by Anbar (U.S. Patent 5,771,261). The Examiner alleges that all of the elements of these claims are disclosed in Anbar.

In particular, with respect to independent claims 1, 12, and 23, the Examiner states that:

Anbar discloses a system for use in detecting deception of a person (see lines 44-52 of column 4), the system comprising: a thermal infrared imaging device operable to provide data of at least a region of a face of a person (see lines 11-13 of column 10); and a computing apparatus operable upon the thermal image data to transform the thermal image data to blood flow rate data i.e., HST which relates to a change in blood flow rate

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described as an enhancement in perfusion (see lines 37-62 of column 3), for use in determining whether the person is deceptive or non-deceptive (see line 8 of column 10 through line 14 of column 12).

and further:

With respect to claims 1, 2, and 4-10: The method steps recited in said claims will be performed during the normal operation of the system disclosed by Anbar.

With respect to claims 23 and 25-28: As discussed above, Anbar discloses a system for use as a lie detector/polygraph, which will perform, during its normal operation, the method steps recited in said claims.

Further, with respect to independent claims 30 and 36, the Examiner alleges:

Anbar discloses a system for use in monitoring blood flow rate/perfusion and further operable to determine a physiological state i.e., level of anxiety, of the person based on the blood flow rate information i.e., HST which relates to a change in blood flow rate described as an enhancement in perfusion (see lines 37-62 of column 3 and lines 56-63 of column 4), the system comprising:

A thermal infrared image device operable to provide thermal image data of at least a region of the face of a person ((see step 1 described in column 13 and step 1 described in column 11); and a computing apparatus operable upon the thermal image data to transform the thermal image data to blood flow rate information comprising a change in blood flow rate, represented by the parameter HST (see lines 16-28 of column 4, step 2 described in lines 36-39 of column 13 and steps 1-11 described in columns 10-11).

and further:

With respect to claims 30 and 32-36: As discussed above, the system disclosed by Anbar will perform, during its normal operation, the method steps recited in said claim.

Applicant respectfully traverses the rejections and as discussed in response to the previous office action, each of the independent claims 1, 12, 23, 30, and 36 includes a limitation that thermal image data is transformed into at least change of blood flow rate or includes apparatus for performing such a transformation. For example, claim 1 includes “determining change of blood flow rate;” claim 12 includes “a computing apparatus operable upon the thermal image data to transform the thermal image data to blood flow rate data . . . wherein the blood flow rate data comprises change of blood flow rate;” and so forth.

For a claim to be anticipated under 35 U.S.C. § 102(b), each and every element of the

claim must be found in a single prior art reference. *See M.P.E.P. § 2131.*

Anbar does not describe the limitations of the amended independent claims 1, 12, 23, 30, and 36. Anbar does not describe transformation of thermal image data to change of blood flow rate. For example, such transformation to change of blood flow rate according to the present invention is described, in one embodiment, in the specification at pages 24-27. Such a transformation of thermal image data to change of blood flow rate is not described in Anbar contrary to the Examiner's allegations, nor would such a transformation be "performed, during normal operation" in Anbar.

Anbar uses a thermal imaging system. However, Anbar does not transform thermal image data to change of blood flow rate. Anbar simply determines a thermal quantity referred to as "HST." HST is defined as the average temperature divided by the standard deviation of the average temperature; a dimensionless parameter. In Anbar, it is indicated that "to a much lesser extent" HST is "affected "by the blood flow in subcutaneous vessels." In other words, Anbar assumes that the quantity HST is correlated indirectly with blood perfusion. However, there is no transformation of thermal image data to change of blood flow rate as described in the pending claims (e.g., a heat transfer equation that allows one to compute blood flow rate values out of thermal values). Anbar does not compute blood flow rate values, but rather Anbar uses derivative thermal values (i.e., HST) that are assumed to be, at least in part, the result of quantitatively unspecified blood flow changes.

As such, Anbar never determines change of blood flow rate as described in claim 1 and never transforms thermal image data to change of blood flow rate as described in claims 12, 23, 30, and 36. Rather, HST values are determined by Anbar that are assumed to be, at least in part, the result of quantitatively unspecified blood flow changes. This determination of HST values is not a determination or transformation of thermal data to change in blood flow rate, but rather a determination of a dimensionless value that is defined as the average temperature divided by the standard deviation of the average temperature. There is no determination of change of blood flow rate or transformation of thermal image data to change of blood flow rate.

Further, the method steps recited in the claims are not performed during the normal operation of the system disclosed by Anbar. Anbar clearly indicates that HST values are determined. However, there is no disclosure that change of blood flow rate is calculated.

As discussed above, for a claim to be anticipated by Anbar, each and every element of the claim must be found therein. For at least the above reasons, Anbar does not anticipate independent claims 1, 12, 23, 30, and 36.

Further, the remainder of the rejected claims (i.e., claims 2, 4-10, 13, 15-21, 25-28, 32-35, and 38-40) respectively depend on one of the independent claims, either directly or indirectly. Therefore, they include the limitations of the respective independent claim upon which they depend. As such, these claims are also not anticipated by Anbar for the same reasons as provided above and for reason of their own limitations.

The 35 U.S.C. §103 Rejection

The Examiner rejected claims 11, 22, and 29 under 35 U.S.C. §103(a) as being unpatentable over Anbar in view of Barnett et al. (U.S. Patent 2,944,542). Applicant respectfully traverses such rejections.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally the prior art references must teach or suggest all the claim limitations. *See M.P.E.P. § 2143.*

The rejected claims 11, 22, and 29 respectively depend on one of the independent claims, either directly or indirectly. Therefore, they include the limitations of the respective independent claim upon which they depend. As such, for the same reasons provided above with respect to the independent claims, Anbar does not describe, teach or suggest all the claim limitations of such dependent claims. Further, Barnett et al. does nothing to provide the lacking elements.

For the above reasons, the rejected claims 11, 22, and 29 are not obvious in view of the cited references.

Allowable Subject Matter

Applicants further acknowledge that claims 3, 14, 24, 31, and 37 are objected to as being dependent upon a non-elected base claim, but would be allowable if rewritten in independent

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form including all of the limitations of the base claim and any intervening claims. However, Applicants at this time have not rewritten such claims in independent form as it is believed that such claims are dependent from claims that are in allowable form.

Summary

It is respectfully submitted that the pending claims are in condition for allowance and notification to that effect is respectfully requested. The Examiner is invited to contact Applicant's Representatives, at the below-listed telephone number, if it is believed that prosecution of this application may be assisted thereby.

Respectfully submitted for

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CERTIFICATE UNDER 37 CFR §1.10:

"Express Mail" mailing label number: EV 073736618 US Date of Deposit: 8-8-03
The undersigned hereby certifies that the Transmittal Letter and the paper(s) and/or fee(s), as described hereinabove, are being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR §1.10 on the date indicated above and is addressed to the Assistant Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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